http://opencog.org/roadmap/

This document gives a very high level roadmap for OpenCog development in the next 12 years — all the way from here to advanced human-level AGI! For a more specific roadmap regarding the next 2 years, please consult the wiki.

1 OpenCog Roadmap: 2011-2023

This high-level roadmap charts a course from the current state of the OpenCog system to a full-blown human-level AGI. Each step along the roadmap is discussed in the Building Better Minds manuscript. First some obvious caveats:

- Planning on this broad a level, for a project funded by a complex combination of sources with various goals of their own, is necessarily uncertain. Some tasks will inevitably be carried out sooner or later than this schedule projects.
- This schedule represents an effort to balance ambition with realism. For instance, many important aspects of the tasks here scheduled for 2013-2014 could be initiated now, but are deferred due to staff limitations, and prioritization of other aspects. If appropriate additional funding is achieved some of the 2013 tasks may be started sooner. All in all, if the premises underlying the schedule are correct, then it also follows that the schedule could be accelerated somewhat with sufficient funding. However, not much effort has gone into figuring out exactly how much it could be accelerated.
- The possibility of proceeding along this roadmap is predicated on the AGI concepts and designs described in Building Better Minds being at least approximately correct. If those ideas are profoundly incorrect or incomplete then the timeline may be substantially revised and extended.

Without further ado, we present the OpenCog project timeline … beginning with a very brief recap of the project's history then proceeding to the present and future.

2001-2007: Development of Future OpenCog Code & Designs within Novamente LLC

- The initial OpenCog code was created in 2008 via extracting and cleaning up portions of the Novamente Cognition Engine (NCE), a proprietary AI codebase developed within Novamente LLC
- While primarily a research system, the NCE had also been used in practical applications for government and corporate customers, in areas including data analysis, bioinformatics, natural language processing, uncertain logical inference and the control of animated characters
- The Novamente Cognition Engine itself was inspired by (though significantly different from) earlier work at Webmind Inc. on a system called the "Webmind AI Engine", developed during 1997-2001 by Webmind Inc.'s R&D staff which at times numbered over 40 researchers & developers

2008-2010: Initial Development of OpenCog

- OpenCog was created in 2008 via a collaborative effort between Novamente LLC and the Singularity Institute for Artificial Intelligence
- Initial release comprised a core "Mind OS" platform including a knowledge store and scheduler and networking facilities, plus multiple AI components including initial versions of the PLN probabilistic learning system, the MOSES automated program learning system, and the RelEx language comprehension system (and more)

2011-2012: A Proto-AGI Virtual Agent

- Integrated "toddler-level" intelligence for video game / virtual world characters.

- Focus on robustness, flexibility and adaptive, interactive learning — this is not a good old-fashioned "Blocks World"
- Simple English language dialogue, e.g. answering questions about its environment and state, taking instructions, asking clarifying questions when the instructions aren't understood, etc.
- Integration with OpenBiomind for inference-based meta-learning – the ability to learn about the learning process.
- Inferential analysis of spatio-temporal scenes, e.g. the ability to answer questions about the relationship between entities without directly observing them.
- Integration with DeSTIN for object and event recognition in image and video data.
- Release of OpenCog v1.0.

2013-2014: A Complete, Integrated Proto-AGI Mind

- Collective cognition — allowing multiple intelligent agents in an embodied environment to selectively share knowledge and learn from each other's experience.
- Abstract generalization — extension of inference and program learning systems to utilize higher-order functions.
- Robot control (e.g. humanoid robots, perhaps others) — integration with motion planning and hierarchical control systems, with testing in the BLISS robot lab.
- Experiential language learning — experience-based modification of all levels of the NLP system.
- Connection of OpenCog to a massive, scalable knowledge store including a permanent OpenCog instance that new OpenCog instances can synchronise with on initialization.
- Scalable inference and question answering on a large knowledge base, imported from databases and via automated NLP analysis of large corpora.
- Research and development into a generic probablistic rule engine that seeks to unify a number of independent rule engines within OpenCog.
- Release of OpenCog v2.0.
- Seek to establish OpenCog as a key learning component within at least 6 Universities teaching advanced academic courses in AI.

2015-2016: Advanced Learning and Reasoning

- Virtual world based AI agents that flexibly acquire language and knowledge from human participants.
- Abstract inference that can integrate scientific knowledge derived from research papers with knowledge derived from analyzing scientific datasets (initially prototyped in the area of bioinformatics).
- Humanoid robotic control outside the robot lab within rich environments.
- Initial experimentation with automated control of laboratory equipment, e.g. gene sequencers or microarrays.
- Full implementation of feedback mechanisms to allow cognitive control of lower-level perceptual and motor functions.
- Initial experimentation with mathematical theorem-proving.

2017-2018: AGI Experts

- Creation of an OpenCog-based artificial scientist, operating a small molecular biology laboratory on its own, designing its own experiments and operating the equipment and analyzing the results and describing them in English.
- Creation of an OpenCog-based service robot, which carries out basic household tasks in a manner driven by English-language communication, and knowledge sharing with the network of other robots.
- Creation of an OpenCog-based virtual assistant, which accompanies its employer into various online spaces and augmented realities, providing intelligent guidance as needed.

2019-2021: Full-On Human Level AGI

- Integration of special-purpose intelligent agents from 2017-2018 into a single OpenCog-based mind kit.
- Risk-assessment of goal stability under self-modification, with consultation from the Singularity Institute for Artificial Intelligence.
- Instruction of the integrated OpenCog mind in basics of computer science and programming, to enable it to improve aspects of its own implementation.

2021-2023: Advanced Self-Improvement

- Further instruction in computer science, to enable more significant self-improvement of codebase.
- Further investigation into AI risk and goal stability. Trial self-improvement loops in constrained environments.
- Training in further areas of science, industry, etc.

Note: While considerations of AI ethics (the assurance that a powerful AGI will remain beneficial to humanity, and that AGI development will also be ethical from the AGI's point of view) are only specifically mentioned from 2019, we intend to keep these factors in mind throughout the development of OpenCog.